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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,682	02/09/2006	Yoshiharu Wakao	03970503PUS1	4473

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EXAMINER

STELLING, LUCAS A

ART UNIT	PAPER NUMBER
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4151

NOTIFICATION DATE	DELIVERY MODE
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12/27/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/567,682	Applicant(s) WAKAO ET AL.	
	Examiner Lucas Stelling	Art Unit 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 09 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/27/2006 and 2/9/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, and 3 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP Pub. No. 05-000910 ("Shuzo") in view of JP Pub. No. 2002-086155 ("Keisuke")

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in further view of JP Pub No. 01-094997 ("Kozo") and further in view of Ikuta, et al, *Biofouling Control Using a Synergistic Hydrogen Peroxide and Ferrous Ion Technique*, 49th Annual Meeting, International Water Conference, 1998 ("Ikuta"), as evidenced by the Merck Index Monograph No. 01900.

5. Shuzo teaches a method for treating ship ballast water (**Shuzo English translation abstract**) in which organisms viable in the ship ballast water are exterminated by adding to the ship ballast water hydrogen peroxide or a compound producing hydrogen peroxide in an amount such that a hydrogen peroxide concentration comes to be 10 to 500 mg/L (**Shuzo English translation abstract**). With contact times of 3-40 hours (**Shuzo English translation abstract**). Shuzo is different than the claims in that Shuzo does not teach the use of ferrous ions, catalase, or iodine.

6. As to the use of ferrous ions, Ikuta teaches that FeSO₄ was used at 0.25ppm (**Ikuta p. 449 col. 2 lines 25-30**) in combination with hydrogen peroxide (**Ikuta p. 449 col. 1**) to prevent biofouling in seawater (**Ikuta Abstract**). Ikuta teaches that the use of FeSO₄ with hydrogen peroxide has a synergistic effect when used to control mussels (**Ikuta Conclusion**). Therefore it would have been obvious to a person of ordinary skill in the art at the time of invention to use FeSO₄ with the method of Shuzo to produce a synergistic effect when controlling organisms with hydrogen peroxide in the ballast water.

7. As to the use of catalase, Kozo teaches the use of catalase, in concentrations of 0.01ppm or more, with hydrogen peroxide in controlling marine organism fouling (**Kozo English translation abstract**). The Merck Index teaches that catalase is an enzyme,

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which promotes the decomposition of hydrogen peroxide to water and oxygen (**Merck Index Monograph 01900**). Therefore it would have been obvious to a person of ordinary skill in the art the time of invention to provide catalase in the method of Shozu to control marine organism fouling and to promote the decomposition of excess hydrogen peroxide.

8. As to the use of iodine, Keisuke teaches the use of iodide ions in concentrations between 0.00016 mol/L and 1 mol/L, or 20mg/L to 127x10³mg/L (**Keisuke [0021] teaches the concentration, and Keisuke [0039] potassium iodide is used as an iodine source**) with peroxide or peracetic acid (a peroxide supplier) (**Keisuke [0020]**). Keisuke also teaches that iodide is an effective disinfectant (**Keisuke [0024], “germicidal action of hypobromous acid ... and/or hypiodous acid”**). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to supply iodine in the method of Shuzo to control organisms in ship ballast water because iodine is a known disinfectant usable with peracetic acid.

As to claim 5, The Merck Index teaches that bovine liver catalase is known at least as early as 1962 (**The Merck Index monograph 01900**), and further teaches that catalase for commercial use is obtained from animal livers. Therefore it would be within the understanding of a person of ordinary skill in the art to use bovine catalase in the method of claim 5.

9. As to claim 7, Shuzo teaches a method for controlling the organism growth in ship ballast water. Shozu teaches that seawater is an available source of water for a

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ship and can be used to adjust the concentration of peroxide (**Shozu [0012]**).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to dilute the compound mixture to the desired concentration using available freshwater or seawater in order to adjust the peroxide concentration.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shuzo, Keisuke, Kozu, Ikuta, and the Merck Index as applied to claim 1 above, and further in view of U.S. Patent No. 5,256,701 to Tamura et al ("Tamura").

11. The combination of Shuzo, Keisuke, Kozu, Ikuta, and the Merck Index is different from claim 2 in that the low end of the range taught in Keisuke for iodine concentration is 20mg/L, but claim 2 is drawn to a method where the range is between 0.1mg/L to 10mg/L. Tamura teaches that the biocidal properties of iodine are tied to its concentration, and that the amount of free iodine needed is normally determined by the loss of free iodine due to disinfection consumption and the end use of the disinfection composition (**Tamura col. 1 lines 35-57**). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to provide iodine in the range between 0.1mg/L and 10mg/L as the product of routine experimentation based on the disinfection and consumption parameters of disinfecting ship ballast water. MPEP 2144.05 (II)(A).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Stelling whose telephone number is 571-270-3725. The examiner can normally be reached on Monday through Thursday 12:00PM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on 571-272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Las
/Michael Kornakov/
Supervisory Patent Examiner, Art Unit 4151